

1. 5b) $y = \frac{3x^2 - 4}{x+1}$ ①

$y = (3x+3) + \frac{-1}{x+1}$

$$\begin{array}{r} 3x-3 \\ \hline 3x^2 - 4 \\ 3x^2 + 3x \\ \hline -3x - 4 \\ -3x - 3 \\ \hline -1 \\ \hline \end{array}$$

es $x=0$ $y = \frac{-4}{1} = -4 \Rightarrow (0, -4)$

$y=0$ $0 = \frac{3x^2 - 4}{x+1}$

$0 = 3x^2 - 4$
 $3x^2 = 4$

$x^2 = 4/3$

$x = \pm \sqrt{4/3} \Rightarrow (1.15, 0)$
 $x = \pm 1.15 \Rightarrow (-1.15, 0)$

metry: $\frac{3(-x)^2 - 4}{(-x)+1} = \frac{3x^2 - 4}{-x+1} = -\left(\frac{4-3x^2}{x-1}\right) \neq -y$

As $f(-x) \neq \pm f(x) \Rightarrow$ No Symmetry

Min $y = 3x+3 - \frac{1}{x+1} = 3x+3 - (x+1)^{-1}$

$\frac{dy}{dx} = 3 + (x+1)^{-2}$
 $= 3 + \frac{1}{(x+1)^2}$

Star Pts $\frac{dy}{dx} = 0$

$3 + \frac{1}{(x+1)^2} = 0$

$\frac{1}{(x+1)^2} = -3$

X impossible \Rightarrow No Star Pts

PI $\frac{d^2y}{dx^2} = -2(x+1)^{-3} = \frac{-2}{(x+1)^3} = 0 \Rightarrow$ No POI

Extreme
symptotes

Vertical (Undefined)

Q51 (2)

$$y = \frac{3x^2+4}{x+1} \Rightarrow$$

$$x = -1$$

$$\begin{aligned} x \rightarrow -1^+ & \quad y \rightarrow -\infty \\ x \rightarrow -1^- & \quad y \rightarrow +\infty \end{aligned}$$

Remember to
consider -1.1
& -0.9 on num +
denom

Non-Horizontal / Slant Asymptote.

$$y = 3x + 3$$

$$-\frac{1}{(x+1)}$$

focus on $\pm\infty$
in this

$$x \rightarrow +\infty$$

$$y \rightarrow \# (3x+3)^-$$

$$x \rightarrow -\infty$$

$$y \rightarrow \# (3x+3)^+$$

